

IDS p.14 item 1

PAT-NO: JP361059793A

DOCUMENT-IDENTIFIER: JP 61059793 A

TITLE: SEMICONDUCTOR LIGHT EMITTING ELEMENT

PUBN-DATE: March 27, 1986

INVENTOR-INFORMATION:

NAME

SHIBATA, ATSUSHI

MORI, YOSHIHIRO

IGA, KENICHI

ASSIGNEE-INFORMATION:

NAME

COUNTRY

MATSUSHITA ELECTRIC IND CO LTD

N/A

APPL-NO: JP59181306

APPL-DATE: August 30, 1984

INT-CL (IPC): H01S003/18

ABSTRACT:

**PURPOSE:** To enable the light-emitting position to be changed, by supplying a base region of a transistor having one or more heterojunctions with current from a plurality of independent base electrodes.

**CONSTITUTION:** A base layer (active layer) 203 is provided between collector layer 201 and 202 and an emitter layer 204. Graft-base layers 205 and 206 are then provided on both sides of the base layer 203. Light is emitted at a laser light emitting position 319 by the current  $I_{B<SB>1</SB>}$  from the graft-base layer 205. On the other hand, light is emitted at a laser light emitting

position 320 by the current  $IB_{<SB>2</SB>}$  from the graft-base layer 206. The currents  $IB_{<SB>1</SB>}$  and  $IB_{<SB>2</SB>}$  can be changed by means of a single 318 so as to also change the positions where laser light is emitted. Further, it is also possible to change the light emittance at the positions 319 and 320 in the same way.

COPYRIGHT: (C)1986,JPO&Japio

IDS item 2 (p.14)

No: base el. el. connected to

third l. via graded l.

and base l..

base l. is active l.

only at interface

between ~~at~~ base l.

and emitter l.

which interface is

not ~~the~~ such that

via it the

base el. is el.

connected to ~~be~~

the third l..

PAT-NO: JP404075347A

DOCUMENT-IDENTIFIER: JP 04075347 A

TITLE: HETROJUNCTION BIPOLAR TRANSISTOR

PUBN-DATE: March 10, 1992

INVENTOR-INFORMATION:

NAME

OKUBO, NORIO

KIKUTA, TOSHIO

ASSIGNEE-INFORMATION:

NAME

COUNTRY

FURUKAWA ELECTRIC CO LTD:THE

N/A

APPL-NO: JP02190135

APPL-DATE: July 18, 1990

INT-CL (IPC): H01L021/331, H01L029/205, H01L029/73

ABSTRACT:

PURPOSE: To make it possible to obtain HBT whose current gain is enhanced by installing an interposition layer comprising InGaAsP between a collector layer and a base layer.

CONSTITUTION: A conduction band between a base layer 6 and a collector layer 4 can be smoothly connected by means of an extremely low level of spiking by interposing a graded layer 5 between the base layer 6 and the collect layer 4. In terms of HBT 1 having the graded layer 5 thus obtained, the current amplification factor is 490, which provides current gain two times and more times compared with 210 of the prior art HBT 2. HBT 1 rarely depends on the

collector current voltage when it is turned on.

COPYRIGHT: (C)1992,JPO&Japio

IDS p.14 item 3

*no graded layer.*

PAT-NO: JP402280338A

DOCUMENT-IDENTIFIER: JP 02280338 A

TITLE: HETEROJUNCTION BIPOLAR TRANSISTOR

PUBN-DATE: November 16, 1990

INVENTOR-INFORMATION:

NAME

TANAKA, SHINICHI

ASSIGNEE-INFORMATION:

NAME

NEC CORP

COUNTRY

N/A

APPL-NO: JP01100106

APPL-DATE: April 21, 1989

INT-CL (IPC): H01L021/331, H01L029/205, H01L029/73

US-CL-CURRENT: 257/23, 257/197, 257/198

ABSTRACT:

**PURPOSE:** To improve high frequency characteristic of an InGaAs heterojunction bipolar element by sequentially superposing an InGaAs collector contact layer, an InP collector layer, a collector layer side end with an InGaAs base layer and InP emitter layer, an emitter contact layer on an InP substrate.

**CONSTITUTION:** A main collector zone for determining a collector depleted layer running time of electrons is formed of an InP 3i having high energy position of a satellite level 9. The collector end of a base layer 4 and a